

REMARKS

Claims 1-13 are pending.

I. Claim Amendments

Claims 1, 6 and 7 have been amended to overcome the Section 112 rejections by reciting the percentage is based on total weight of the polymer as supported at page 1, first paragraph.

Claim 1 was also amended to recite and that identical meant in size and shape as supported at page 1, first paragraph which states the tubes are identical except in composition.

Claim 1 was also amended to recite the tube is a medical tube as supported at page 1, second paragraph. Claim 1 was also amended to recite the tube has a sidewall portion and a closed end as shown in the figures and supported at page 4, second paragraph.

New Claims 9 and 12 recite the percentages of Claim 6. New Claims 10 and 13 recite the percentages of Claim 7. New Claim 11 recites "consisting essentially of" language to further distinguish over the cited references.

It is respectfully submitted no new matter is presented by the above amendments.

II. 35 USC 112

As stated above, Claims 1, 6 and 7 have been amended to overcome the Section 112 rejections by reciting the percentage is based on total weight of the polymer and to recite that identical meant in size and shape.

III. 35 USC 103

A. Claims 1 and 4-5

Claims 1 and 4-5 are rejected under 35 USC 103 as being unpatentable over Okuda et al. (US Pat. 6,270,866) in view of Blackwelder (US 5,753,326).

It is respectfully submitted Okuda et al. discloses a heat shrinkable label film. The present claim recites a medical tube having sidewalls and a closed end. This distinguishes from a tube of labeling film. The medical tube sidewalls and closed end provide sufficient rigidity for holding contents of the tube. The thin walled tube of Okuda et al. having opposed open ends (see Fig. 1) cannot serve as a medical tube. In fact, the tube of Okuda et al is not a container. Rather it is placed about the actual container for listing information or other decorative purposes (Okuda, et al., col. 1, lines 11-16).

The motivation of Okuda et al to select its material is to provide "heat shrinkable films for labeling which show proper shrinking properties at low temperatures (70 to 84°C)." (Okuda et al., col. 1, lines 40-42). This motivation is irrelevant to selecting structural material for medical tube sidewalls and closed end.

Blackwelder also discloses shrinkable film material. Blackwelder extrudes its film to have opposed open ends. Thus, it also fails to disclose a medical tube having sidewalls and a closed end.

Claims 4-5 distinguish over the references at least as does Claim 1.

B. Claims 1-7

Claims 1-7 are rejected as unpatentable over JP 56-045190, in view of Blackwelder and Okuda et al.

The Office action asserts JP '190 teaches a centrifuge tube comprising pure polystyrene (PS) or styrene butadiene (S-Bu) rubber. The Office action also asserts it is obvious to combine two compositions for use of the same purpose to form a third composition to be used for the same purpose (citing MPEP 2144.06)

The Office action also asserts Okuda et al. teaches a tube comprising 33% PS and 67 % S-Bu copolymer and that this exhibits suitable shrinkage properties at low temperature and improves impact resistance (citing col. 5, line 67-col. 6, line 2). It is respectfully submitted Okuda et al does not select a tube comprising 33% PS and 67% S-Bu copolymer. Okuda et al. discloses the mixing ratio of the polystyrene resin to the block copolymer is 2 to 100 parts by weight more preferably 12 to 25 parts by weight of the polystyrene resin to 100 parts of the block copolymer. Thus, a 33% PS and 67% S-Bu copolymer is at best within a range of copolymers of Okuda et al.

Moreover, the motivation of Okuda et al. to disclose a 33% PS and 67% S-Bu copolymer as at best within a range of copolymers for films of Okuda et al. is irrelevant to selecting structural material for sidewalls and end walls of the centrifugal tubes of JP '190.

JP '190 would not select material because it heat shrinks at low temperature. Heat shrinking (a type of deformation) is not a desired property for a centrifugal tube material.

Moreover, the Office action is relying upon the statement, that the Okuda et al. polymer improves impact resistance, out of context. The meaning of a film improving impact resistance may not mean the same thing as when discussing improving impact resistance of a structural material. It is unclear if, in the context of a film, improved impact resistance means improved tear resistance, or that it provides padding to the actual structural material, or some other not clearly disclosed meaning.

Moreover, the present invention has unexpected advantages. The data at page 5 shows twice as many aged PS tubes leaked as did 30% PS/70% copolymer tubes.

Example 2 of the specification tests resistance to plastic deformation of the blend

compared to pure copolymer. The table at page 6 shows the 25 and 30% PS blends are comparable to pure S-Bu. As explained at page 1, pure S-Bu is used for larger tubes because pure PS is known to be inherently brittle. Thus, to invent a tube that comprises PS without, in a number of instances, suffering from the brittleness normally associated with PS is a significant advantage.

Pages 6 and 7 also disclose other unexpected advantages. The table at page 6 of the application shows 25 and 30% PS/copolymer blends at 3500 rpm and 6500 rpm have better resistance to leakage during centrifugation than pure copolymer. Also, as explained at page 7, a blend of 30/70 PS/S-Bu has better resistance to leakage after being subjected to radiation than pure S-Bu. Also, as explained at page 7, a blend of 30/70 PS/S-Bu has better resistance to leakage at 3500 rpm after aging than pure S-Bu. It was unexpected that adding polystyrene to styrene butadiene would improve resistance to leakage because pure polystyrene (PS) was conventionally thought to be more brittle than pure styrene butadiene (S-Bu) copolymer as explained at page 1, third paragraph, of the present specification.

Thus, it is respectfully submitted these references neither alone nor combined make the present invention obvious.

C. Claim 8

Claim 8 stands are rejected as unpatentable over JP 56-045190, in view of Blackwelder and Okuda et al. as applied to Claim 1, and further in view of Metcoff (US Pat. No. 4,818,516). It is respectfully submitted that Metcoff does not make up for the deficiencies of the references applied against its base Claim 1.

D. Dependent Claims

Claims 6 and 7 recite narrower percent composition ranges to further distinguish over the references.

JP '190 teaches a tube comprising (i) polystyrene resin together with styrene-maleic anhydride copolymer or (ii) styrene-butadiene rubber together with styrene-maleic anhydride copolymer. New Claims 11-13 recite "consisting essentially of language" which avoids the styrene-maleic anhydride copolymer of JP '190.

IV. Conclusion

In view of the above, it is respectfully submitted that all objections and rejections are overcome. Thus, a Notice of Allowance is respectfully requested.

Respectfully submitted,

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